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MVPA / VPA Amplifier Manual V1.1

Revision History

Versio	Modifications	Date
1.0	Initial Draft	09/07/2001
1.1	Revised	18/06/2002

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DISCLAIMER

This manual contains information that is correct to the best of Audix Systems knowledge. It is intended to be a guide and should be used as such. It should not be considered as a sole source of technical instruction, replacing good technical judgement, since all possible situations cannot be anticipated. If there are any doubts as to exact installation, configuration and/or use, call Audix Systems at +44 (0)1799 540888

ACKNOWLEDGEMENTS
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Technical Support
In the unlikely event of you having problems with your Amplifier please contact our Customer Services Department.

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1. Specification

Power Requirements (AC / DC)	
Amplifier chassis voltage requirements	230 volts AC 50/60Hz with automatic reversion to 24VDC during AC failure
AC inrush current (Chassis fitted with 4 x 60 Watt PowerBlocs)	10A maximum for less than 1 second, non repetitive (typically <7.5A)
1 x 60 Watt RMS PowerBloc	160VAC / 6.5ADC Max
2 x 60 Watt RMS PowerBloc	320VAC / 13ADC Max
3 x 60 Watt RMS PowerBloc	480VAC / 19.5ADC Max
4 x 60 Watt RMS PowerBloc	640VAC / 26ADC Max
Power Factor	0.85 at maximum power
Heat Dissipation (Watts)	
240 Watt Amplifier (Full Power)	325 Watts
240 Watt Amplifier (Half Power)	300 Watts
240 Watt Amplifier (1/8th Power)	175 Watts
Automatic thermal shutdown	Gain reduction while heatsink exceeds 85°C
Audio / Electrical Characteristics	
Input Impedance	10K ohms nominal, electronically balanced
Input Sensitivity	0dBu (775mV) for rated power
Power Bandwidth (-3dB)	100Hz – 20Khz
Distortion (THD)	Less than 1% at rated power, typically less than 0.08% at 1Khz.
Noise	-80dB max
Fault Monitoring	
Built in monitoring circuitry (Fitted in MVPA models only)	Detection and display of individual PowerBloc Fail, Mains Fail, Battery Fail and Charger Fail. With general fault output to Monitoring System (FMS).
Short circuit protection	Indefinite operation into short cct load
Mechanical	
Dimensions (HxWxD)	133 (3U) x 483 x 310 (rack mount 19”frame)
Audio connections	Plug-in connectors with screw terminals
Mains connections	I.E.C. mains connector
DC supply connections	4-pin multiway connector
Amplifier Finish	Black
Reliability / Maintainability	
MTBF (hours)	90,000 hours
MTTR (i.e. fit replacement amp bloc)	15 minutes
Environment	
Operating temperature range (°C)	-5°C to 40°C
Relative Humidity	0 – 95%

1.1 Amplifier Model Range

Audix Systems Model No.	Output Channels	Weight	24VDC (mA) Quiescent	230AC (mA) Quiescent	24VDC (A) Max.	230VAC (A) Max.
MVPA601	1 x 60W	10Kg	130	57	6.5	0.7
MVPA602	2 x 60W	12Kg	200	64	13	1.4
MVPA603	3 x 60W	14Kg	270	71	20	2
MVPA604	4 x 60W	16Kg	340	78	26	2.78
MVPA1201	1 x 120W	12Kg	145	60	13	1.4
MVPA1202	2 x 120W	16Kg	230	70	26	2.78
MVPA1260	1 x 120W 1 x 60W	14Kg	215	67	20	2
MVPA1262	1 x 120W 2 x 60W	16Kg	285	74	26	2.78
MVPA1801	1 x 180W	14Kg	160	63	20	2
MVPA1860	1 x 180W 1 x 60W	16Kg	230	70	26	2.78
MVPA2401	1 x 240W	16Kg	175	66	26	2.78

1.2 Amplifier Introduction

Audix Systems 60 watt 'PowerBloc' amplifier modules are used individually or combined to provide 100 Volt line outputs of 60, 120, 180 or 240 Watts R.M.S. A rack mounting chassis/power supply occupying 3U of space holds up to four PowerBloc modules which may be arranged as four totally independent 60 watt amplifiers or in any of ten other output configurations (see paragraph 1.2 ‘Amplifier model range’ for details).

Using proven MOSFET circuit techniques results in an efficient and extremely reliable power amplifier. The amplifiers are protected from short circuit speaker lines by current limiting on the output stage. The amplifiers are protected from persistently being over-driven by a thermal cut-out which is triggered at 85°C decreasing the amplifier input drive to reduce the output stage power dissipation.

Modules operating in parallel share a single input/driver stage. Input level controls may be fitted to all combinations of PowerBlocs as appropriate.

The output power of existing units can be increased at any time by the addition of more PowerBloc output modules (subject to available space in the mainframe).

1.3 Amplifier Sleep Mode

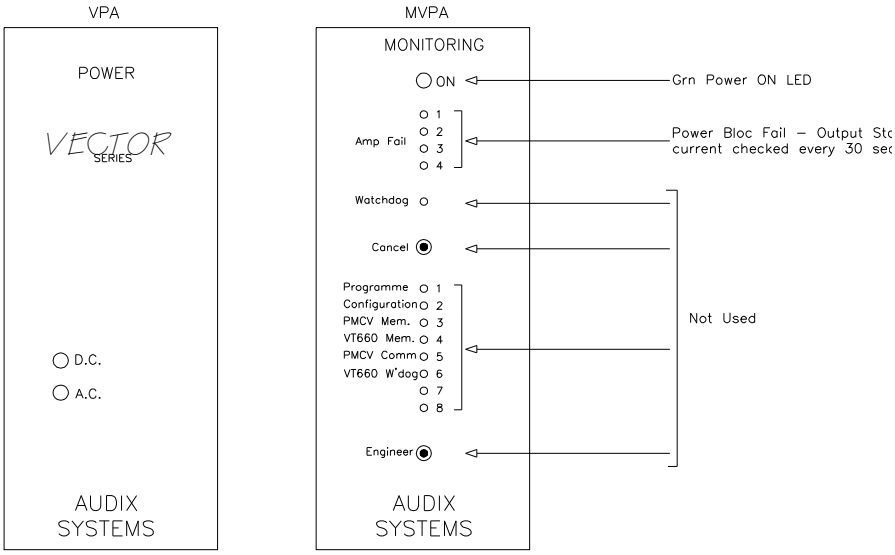
While the system is idle all amplifiers are automatically set in 'sleep' mode to reduce power consumption. This is particularly important while the AC mains supply has failed and the system is running on internal batteries.

In order to allow the 20Khz surveillance signal through the system, the control matrix feeds a 'wake-up' signal to all power amplifiers. The purpose of this signal is to command Audix MOSFET PowerBlocs to switch from their very low power consumption mode (asleep) to their quiescent state (awake). This allows the surveillance tone to pass through amplifiers without missing the first part of the signal.

During normal speech announcements or alarms only the amplifiers selected for broadcast wake-up. In this case the wake-up is initiated by the audio at the input terminals of each amplifier. This ensures that any amplifiers NOT being used for broadcast remain in 'sleep' mode.

1.4 Amplifiers chassis Front Panel Displays

Faults can be detected and displayed on 'MVPA' versions of the amplifier.



1.5 Amplifier Adjustments / Link Settings

A maximum of 4 PowerBlocs can be fitted inside a chassis. A 240W unit is fitted with 4 PowerBlocs, one of which is a master (MPB260), while three are slave units (MPB261). The link settings on Master / Slave Blocs are as follows:

Note: All adjustments are factory set. No further adjustments should be necessary.

MPB160 Master

VR1	-	Fine Gain Control
VR2	-	Quiescent Current

MPB161 Slave

VR1 - Not fitted
VR2 - Quiescent Current

Front panel mounted lockable gain adjustment controls can be fitted (optional) to each Master PowerBloc. This allows user adjustment of audio levels, during system commissioning, which can be locked once set.

Link Settings for MPB260 & 261

J1 - Master / Slave. This 2 way jumper allows the Master Bloc to wake-up other associated slave Blocs in the same chassis.
J2 - When fitted the audio input causes the amplifier to wake-up
Lk1 - When not fitted the amplifier is permanently awake

Monitor Board D678 Link Settings

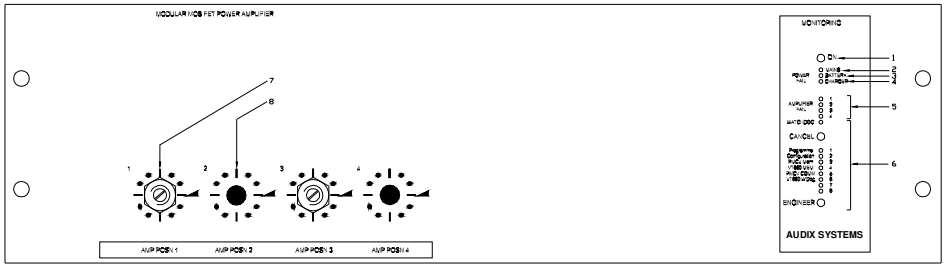
J1 - If fitted the sample rate changes from 30 to 4 seconds intervals (This link is temporarily fitted during PCB testing. All PCB's are factory set at 30 seconds)
J2 - Jumper not fitted if amplifier fitted in slot position 1
J3 - Jumper not fitted if amplifier fitted in slot position 2
J4 - Jumper not fitted if amplifier fitted in slot position 3
J5 - Jumper not fitted if amplifier fitted in slot position 4
CHG - Fitted if system includes a battery charger
BATT - Fitted if system includes back-up batteries

Important Note:

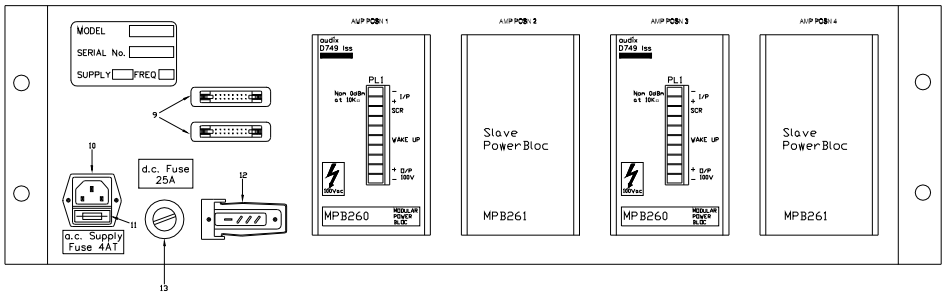
The current amplifier PowerBloc range is MPB260 (Master) and MPB261 (Slave). Older versions include 160, 161, 60 and 61. When fitting PowerBlocs into existing power / frames ensure that different versions are NOT mixed. I.E. 260 units should only be mixed with 261 units and 160 units should only be mixed with 161 units etc.

1.6 Amplifier Panel Arrangement (MVPA1202)

Amplifier Front View



Amplifier Rear View



1. Amplifier chassis power ON indicator
2. Mains Fail Indicator
3. Battery Fail Indicator
4. Battery Charger Fail Indicator
5. Amplifier Bloc fault indicators
6. Not Used
7. Amplifier gain control (lockable potentiometer)
8. Unused position for Amplifier output level control
9. Loop in / out FMS fault bus ribbon connection
10. AC Supply input connector
11. AC Fuse
12. DC Supply input connector
13. DC Fuse

2. SAFETY CONSIDERATIONS

The electrical installation of which the amplifier PowerBloc is part must incorporate an all-pole mains isolating switch, with contact separation of at least 3mm.

The mains power supply cord to the amplifier unit must have conductor area at least 1mm². The power cord must be BASEC or HAR approved with connectors complying with EN60320 and must provide a safety earth.

Audix systems standby battery supply units (Models SBS241, SBS242, or SBS481) all include a separate fuse on each 24V dc output. The fuse rating on the feed to a 240 Watt amplifier should be 25A anti-surge (T25AH)

Where a 24V DC standby supply is connected, the DC feed to the amplifier should be fused at source with a supply fuse rating of 25A anti-surge (T25AH).

The amplifier should not be exposed to dripping or splashing and any liquids.

2.1 Safety Considerations for System Maintenance

Only a qualified and trained electronics engineer should be permitted to make any type of adjustment or repair to the Public Address or Voice Alarm System.

The following safety factors should be considered before attempting to maintain or repair an amplifier

- Electrical
- Heat
- Weight

2.2 Electrical Hazards

High Voltages exist within this apparatus:

- 230 volt mains
- 100V line

An power / frame primary supply is 230v AC 50-60Hz. This is connected by means of an IEC fused inlet. This equipment does not include a mains isolation switch therefore the:

Mains must be disconnected from the apparatus before any part of the casing is removed.

Insulated shrouds protect the mains supply within the apparatus. No part of the mains supply can be easily touched unless these internal covers are removed.

Battery Backup

Where the amplifier has a secondary supply i.e. 24Volt Battery backup:

The battery supply must be also be disconnected before any part of the casing is removed.

2.3 Heat Hazards.

There is a potential temperature hazard around the rear an amplifier frame. The MVPA power amplifier heat sinks may become Very Hot. This is generally when an alarm has been broadcast for a long period of time. Heating may also occur if the amplifier power block is in a fault condition.

2.4 Weight Hazards.

Warning:- Amplifier frames are heavy!

If an amplifier frame is to be moved the appropriate lifting code of practice should be followed.

Approximate frame weight is 14 – 16Kg's (Depending on particular model)

3 Maintenance

Although MVPA amplifiers require little or no maintenance the Public Address or Voice Alarm system to which it is installed may require regular scheduled maintenance.

For BS5839 compliant Voice Alarm systems please refer to BS5839 Part 1 (Code of practice for system design, installation and servicing) for recommend maintenance levels.

It is recommended that all members of staff should be urged to report problems with the PublicAddress or Voice Alarm system (i.e. distortion, speakers not operating, poor coverage) to the department responsible for the maintenance of such equipment.

For assistance, please contact our Customer Services Department to obtain advice on planned maintenance and Service Contracts